

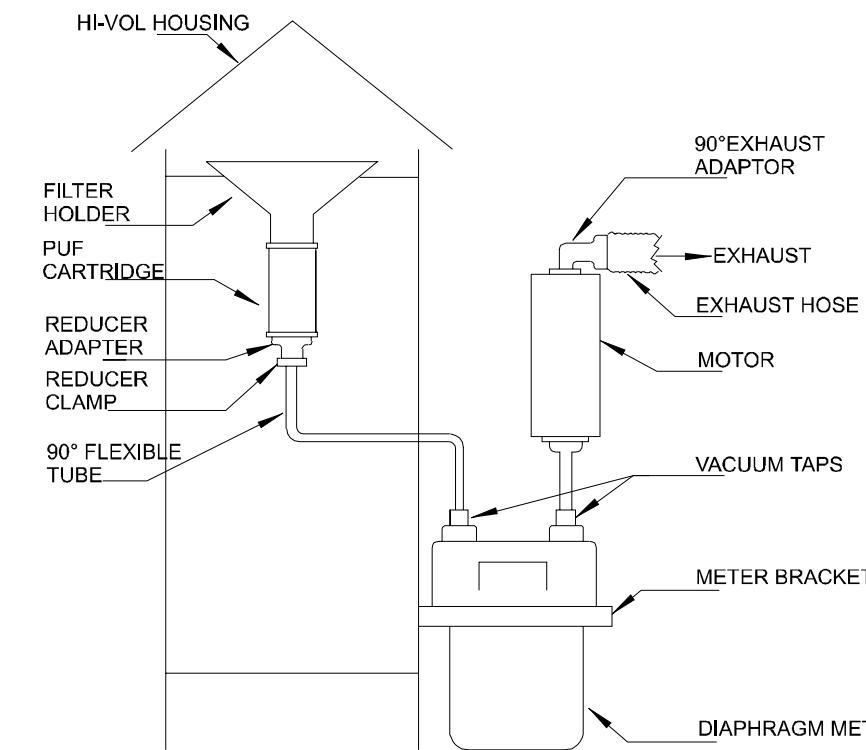
*Environment Canada*  
*Methodology for PCDD/PCDF Sampling*

**GLBTS - Dioxin Furan Workgroup**  
**June 17, 2004**

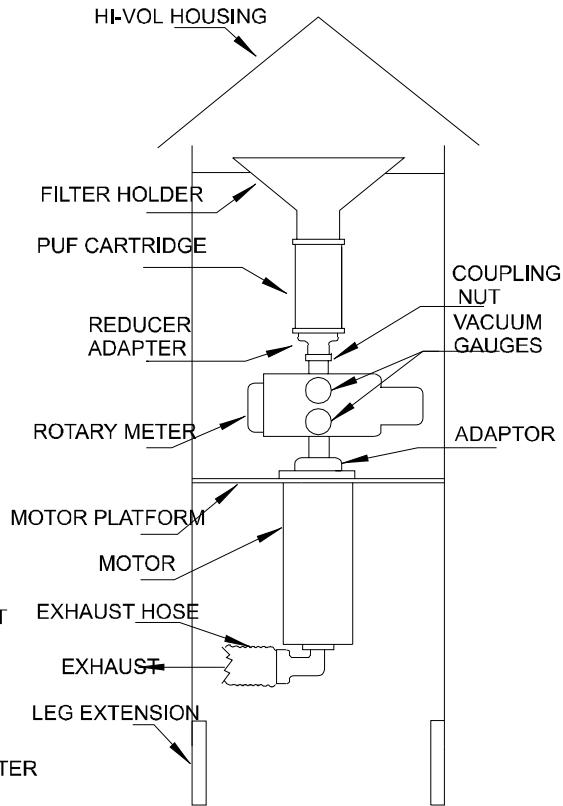
## **Sampling Method**

- modified conventional hi-vol sampler
- Incorporates a dry-gas meter or a rotary vane meter for an accurate measure of total sample volume
- 20 x 25 cm Pallflex Teflon coated glass fibre filter media
- 7.5 cm dia. PUF sorbent with a bed depth of 15 cm (two 7.5 cm deep plugs)
- Sample volume over 24h = 800 to 900 m<sup>3</sup>

# Sampler Assembly



(A) DIAPHRAGM METER OPTION



(A) ROTARY VANE METER OPTION

# Comparison of Protocols

## ■ EC

- Rural and urban sites beginning in 1989
- PCDD/PCDF
- Hi-vol sampler configuration with TCGF filter/PUF
- HRMS analytical method
  - surrogate spikes prior to analysis

## ■ NDAMN

- Rural sites only beginning in 1998
- PCDD/PCDF and coplanar PCBs
- PS1 Sampler with Quartz Filter/PUF
- HRMS analytical method
  - surrogate spikes prior to sampling

# Comparison of Protocols

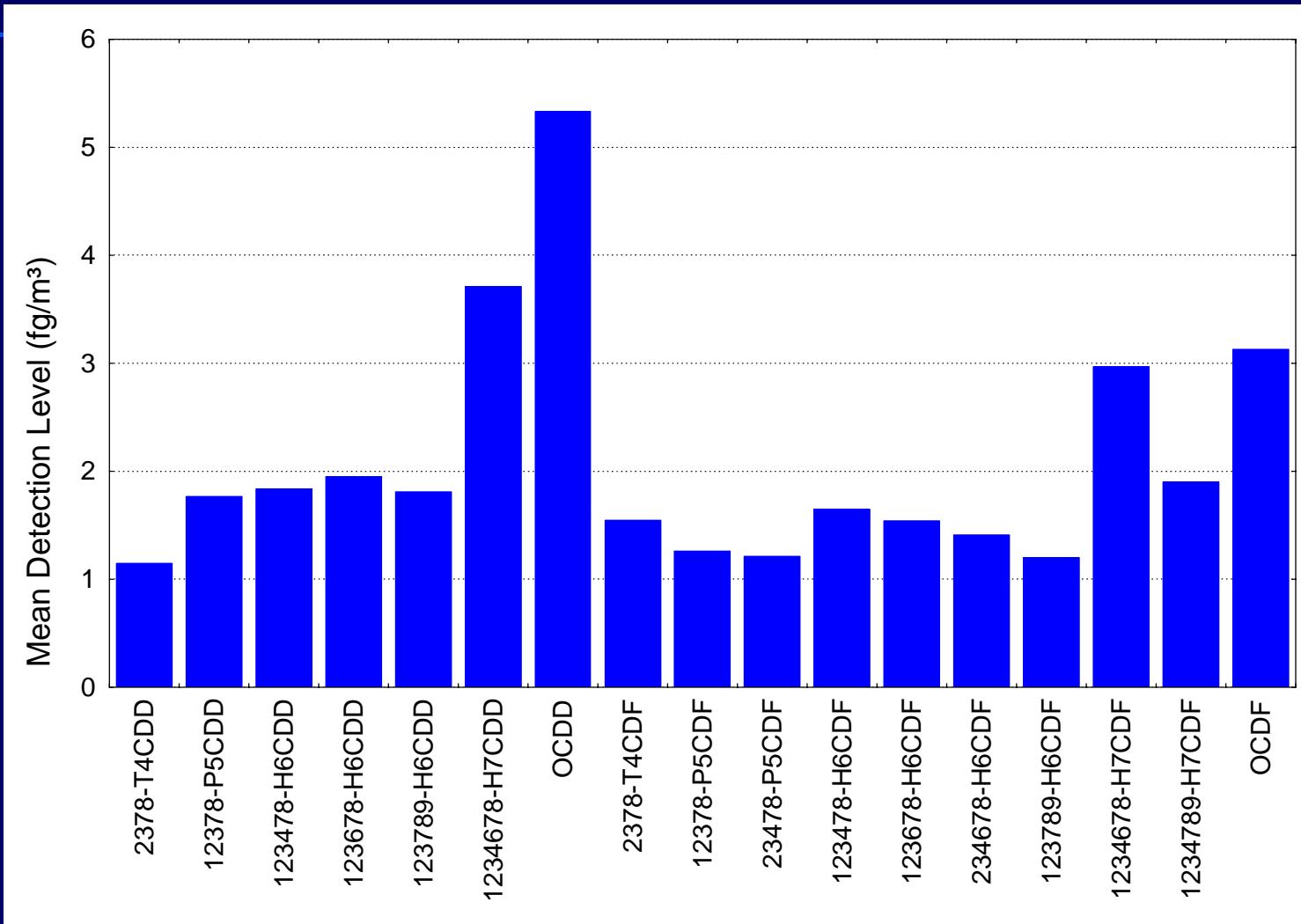
## ■ EC

- 24h sampling once every 12 or 24 days
- 800 - 900 m<sup>3</sup> volume
- very accurate total volume measurement
- DL Target = 1 fg/m<sup>3</sup>

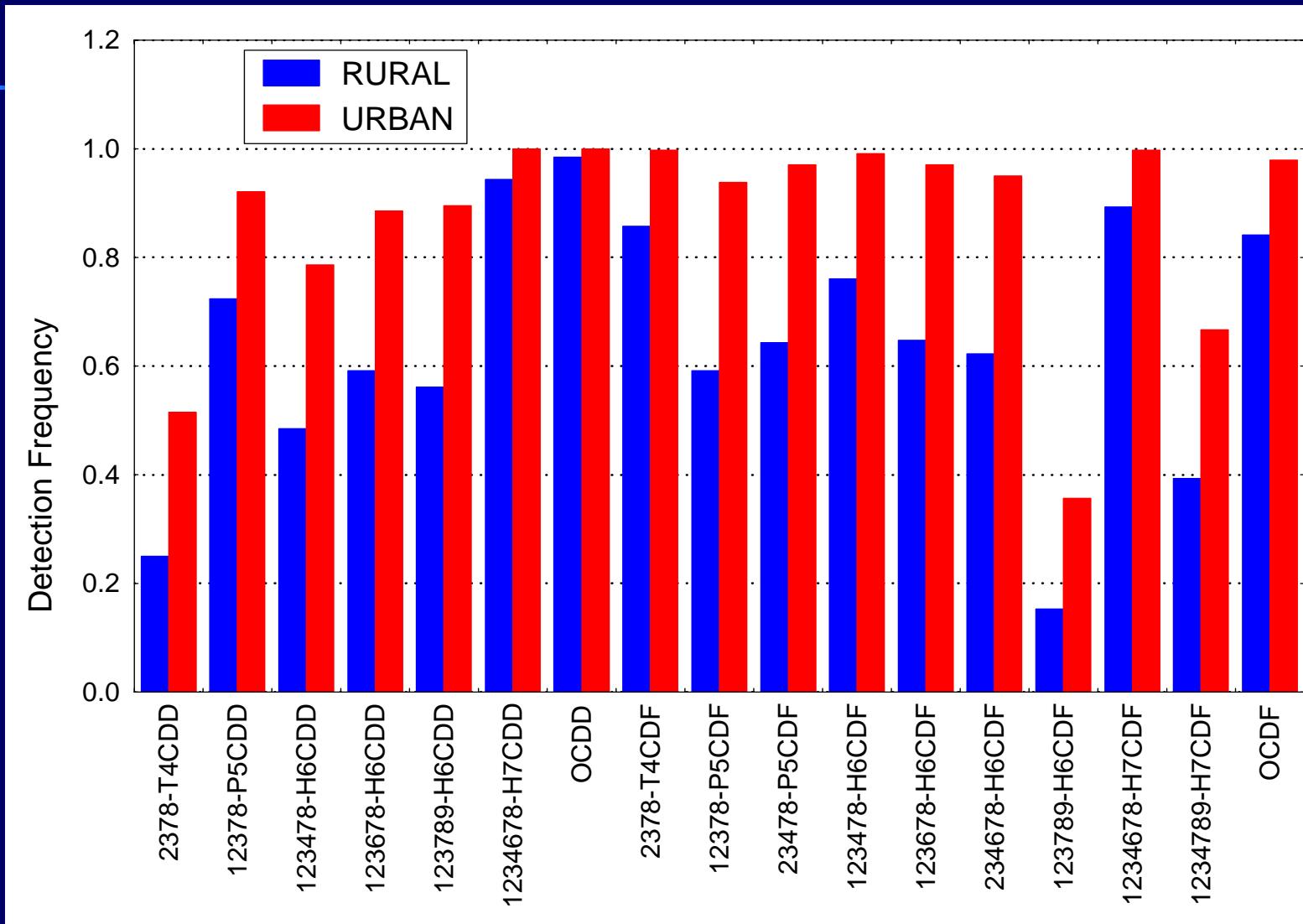
## ■ NDAMN

- 4 sampling moments of 5 days per week for 4 weeks
- 6000 m<sup>3</sup> volume (2,000 m<sup>3</sup> minimum)
- flow rates checked before and after sampling and volume calculated
- DL target = 0.1 fg/m<sup>3</sup>

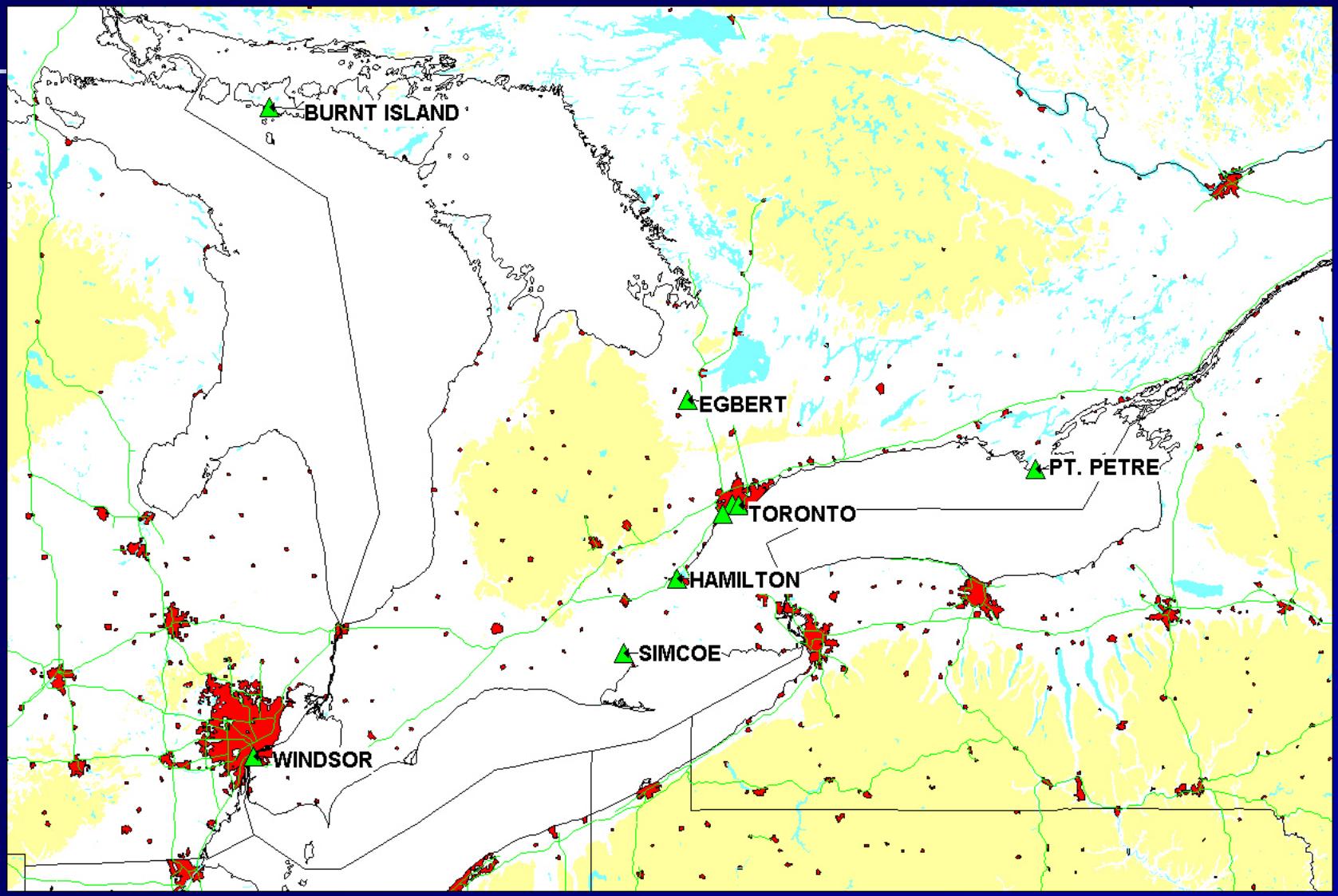
# Detection Levels (rural sites)



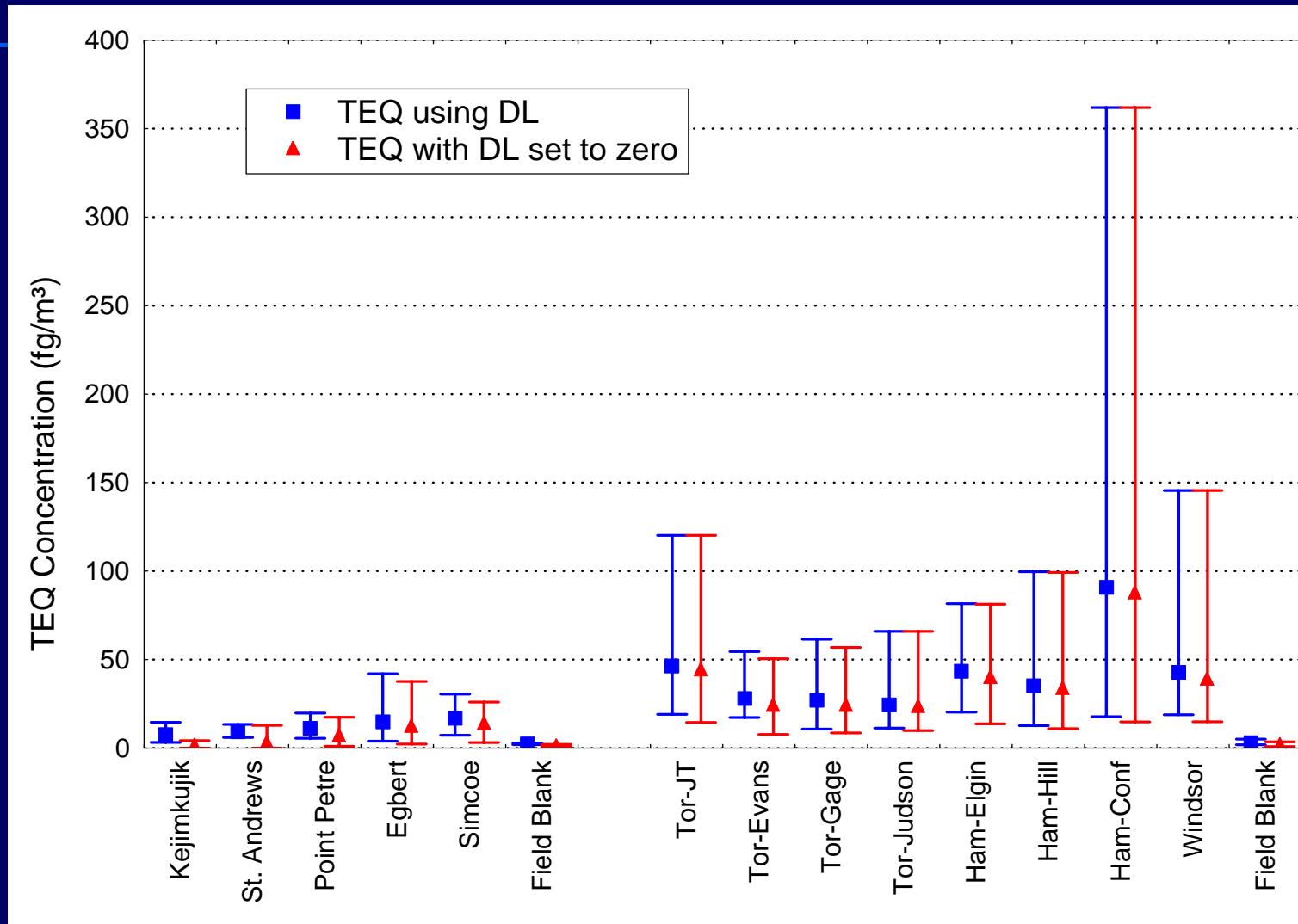
# Average frequency of detection



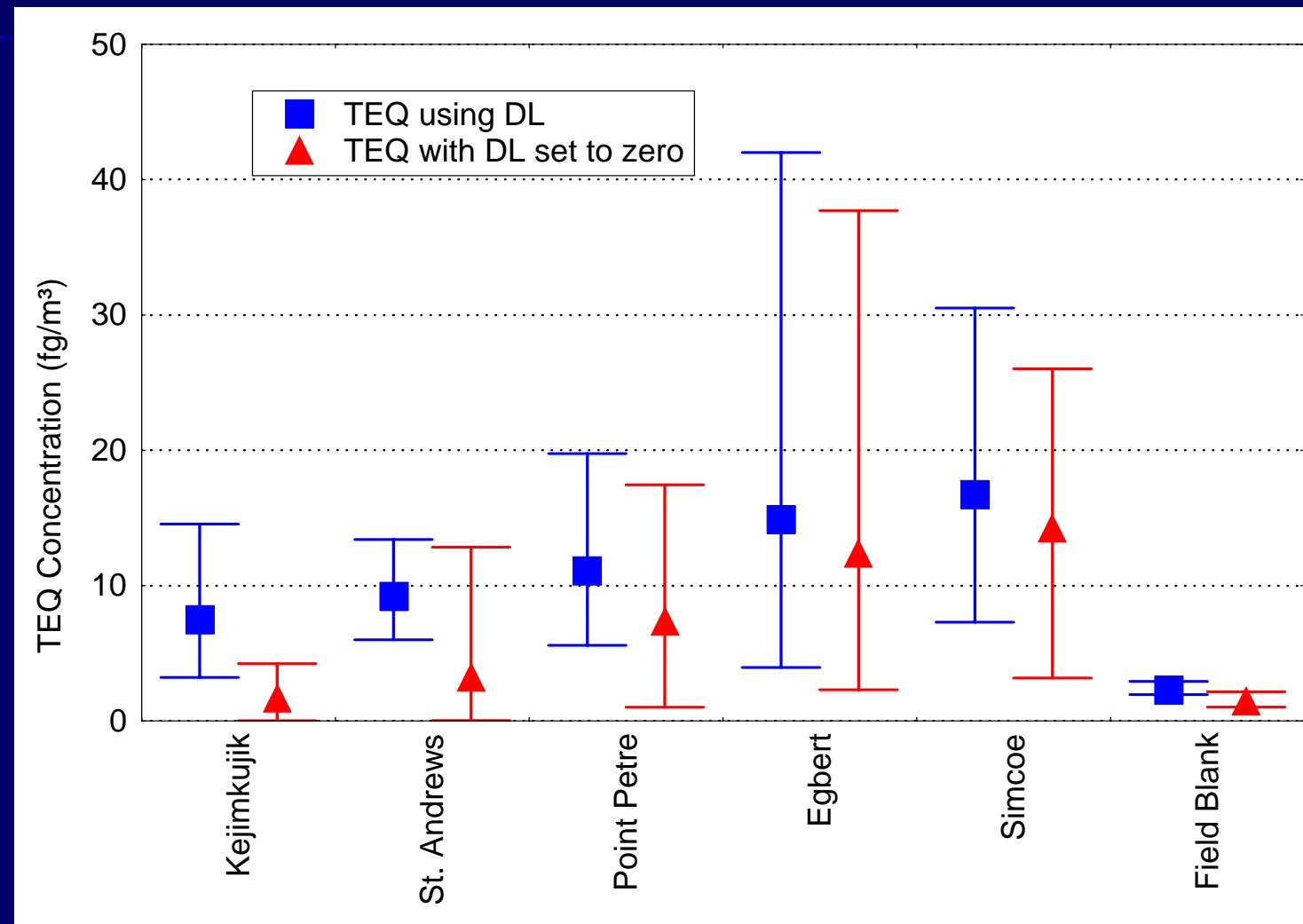
# Monitoring Sites in Ontario



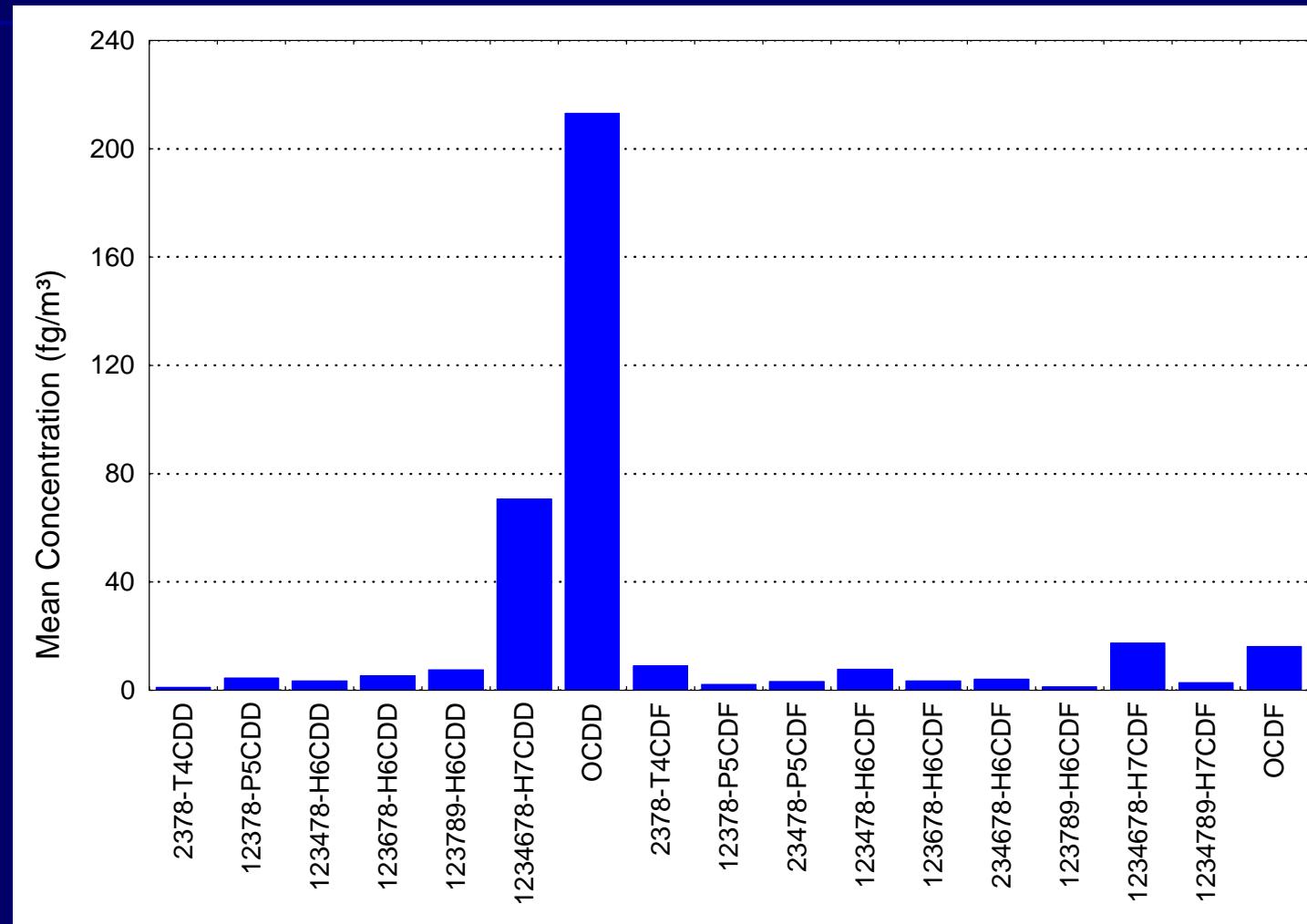
## 2,3,7,8-TCDD TEQ Concentration for 2000-2003 (Mean, 10<sup>th</sup> and 95<sup>th</sup> percentile)



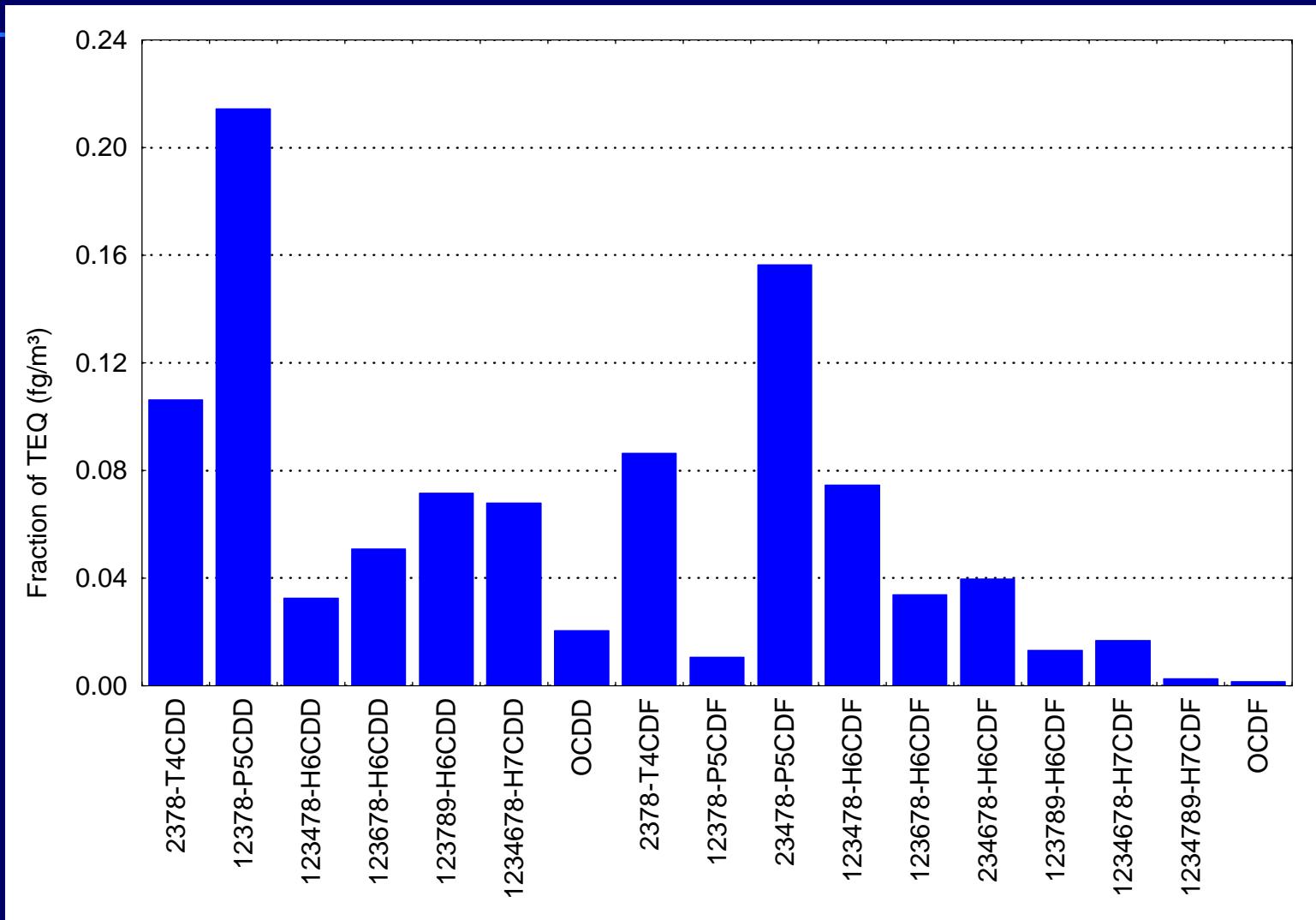
## 2,3,7,8-TCDD TEQ Concentration for 2000-2003 (Mean, 10<sup>th</sup> and 95<sup>th</sup> percentile)



# Mean congener concentrations for rural sites (2000 – 2003)

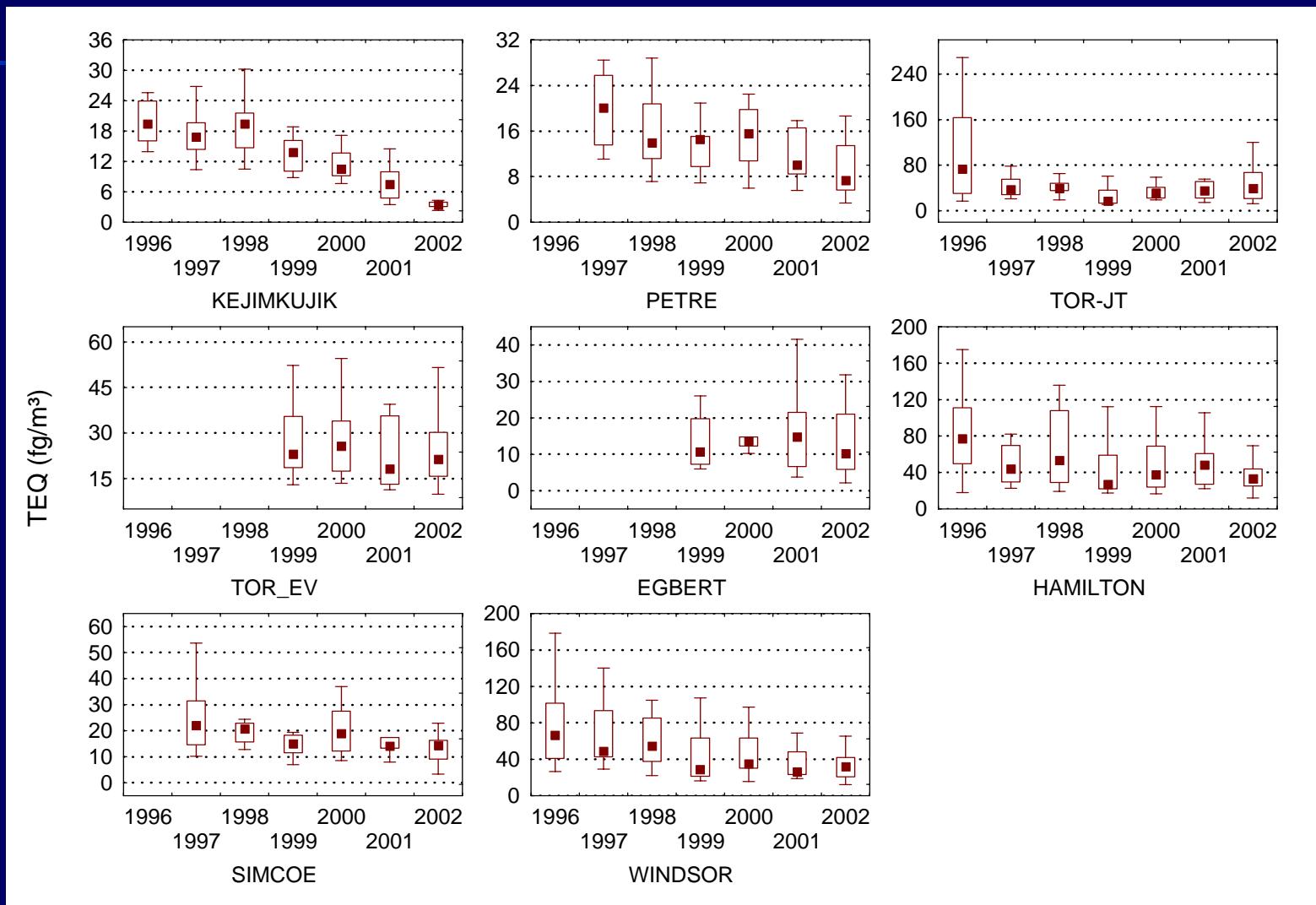


# Mean fraction of TEQ for rural sites (2000 – 2003)



# Trend in TEQ Concentrations

(Median, 25<sup>th</sup> & 75<sup>th</sup> percentile, non-outlier max and min)



# Trend in TEQ Concentrations (NDs =0)

(Median, 25<sup>th</sup> & 75<sup>th</sup> percentile, non-outlier max and min)

